

REMARKS

Claims 10-20 are all the claims pending in this Application. Claims 16-19 have been previously withdrawn pursuant to an Election of Species. Claims 10, 11, and 15 have been amended herein. This Amendment, submitted in reply to the Office Action dated March 18, 2008, is believed to be fully responsive to each point of rejection raised therein. Accordingly, favorable reconsideration on the merits is respectfully requested.

Claim Rejections 35 U.S.C. §102

Claims 10-15 and 20 stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Putti (U.S. Patent No. 6,331,069). Applicant respectfully traverses this rejection.

Claim 10 currently recites:

“A screw for use in an extruder comprising a cylinder for carrying a rubber material supplied from a hopper port at an upstream end of the cylinder by the screw, molding it into a predetermined sectional form and extruding it from a nozzle attached to a downstream end of the cylinder,

wherein a height of a flight portion of that part of the screw located below the hopper port is lower than a height of a flight portion located on a downstream side, and said height at said part varies continuously in a peripheral direction over a predetermined rotational angle of the screw.”

Putti is directed to a concrete extrusion machine and spiral conveyor for the concrete extrusion machine. As shown in Fig. 5, the concrete extrusion machine comprises a hopper 32 which feeds concrete to a spiral conveyor 27 to be extruded. As shown in Figs. 7 and 8, the spiral conveyor has a first diameter D1 in a first section 202.1 and increase to a diameter D2 in section 206.1. *See* Col 5, lines 61-65. The section 202.1 appears to be located beneath the hopper portion, while the section 206.1 is located “downstream” of the hopper portion.

However, Putti does not disclose varying the flight height as recited in claim 10. In the parts located below the hopper port (L1, L4, and L7 of Figs. 1, 7, and 8 respectively), the shaft diameter of the screw, the height of the flight and the outer diameter of screw are kept constant. The outer diameter of screw and the height of the flight do not continuously vary in a circumferential direction. Further, Putti teaches varying the screw shaft diameter along the length of the screw, while the height of the flight portions is maintained constant, causing the “absolute” diameter of the screw to increase as the diameter of the screw shaft increases. *See* Figs. 7 and 8. Additionally, the height of flight portions slightly decreases near the downstream end, even though the diameter of the shaft and the “absolute” diameter of the screw continue to increase. Therefore, Applicant respectfully submits that Putti does not teach “a height of a flight portion of the screw located below the hopper port being lower than a height of the flight portion located on a downstream side” as recited in claim 10.

Further, claim 10 recites that “said height at said part varies continuously in a peripheral direction over a predetermined rotational angle of the screw”. Conversely, Putti shows the screw does not vary in diameter, but is actually constant. Similarly, the height of the flight portion at this location is also constant and does not vary over a rotational angle of the screw as recited in claim 10. Therefore, Applicant respectfully submits that Putti also fails to teach this structure. For at least these reasons, Applicant respectfully submits that claim 10 is patentable over the Putti Reference. Applicant also submits that claims 11-15 and claim 20 are also patentable over Putti at least by virtue of their dependency.

Further, claim 11 recites “wherein a portion of the screw where the height of the flight portion is lower than the height of the flight portion on the downstream side subtends a rotational

angle of 180° or less.” In other words, the portion of the flight which has a reduced height exists over less than one-half of a rotation of the screw. Conversely, in Putti there is no disclosed variation of flight height, and even if one were to consider the variation in diameter of the screw per se, this occurs only downstream of the hopper and extends over a much larger rotational angle (approximately 2160° as shown in Figs. 7 and 8). Applicant respectfully submits that Putti does not teach or even suggest limiting the variation in height of the flight portions to a rotational angle of 180° as recited in claim 11 and therefore, submits that claim 11 is patentable over Putti for this additional reason.

Further, claim 12 recites that there are fewer threads on the upstream side than on the downstream side of the screw. Claim 13 recites that the threads are more widely spaced on the upstream side than on the downstream side of the screw. Conversely, the screw taught in Putti exhibits a structure, which is precisely the opposite of the structures recited in claims 12 and 13. In other words, Putti teaches a screw having a greater number of threads, more narrowly spaced upstream than downstream. Therefore, Applicant respectfully submits that claims 12 and 13 are patentable over the Putti reference for at least this additional reason.

Further, claim 15 recites that the diameter of the screw beneath the hopper is between 2% and 6% smaller than the diameter of screw at the downstream side. Conversely, the screw conveyor shown in Putti has far greater variation in diameter than recited in claim 15. Therefore, Applicant respectfully submits that claim 15 is patentable over the Putti reference for this additional reason.

For at least the reasons discussed above, Applicant respectfully requests that the rejection of claims 10-15 and 20 based on the Putti reference be withdrawn.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880 via EFS payment screen. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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